Audit Report

DEFENSE LOGISTICS AGENCY LOGISTICS YEAR 2000
END-TO-END TEST PLANNING

Report No. D-2000-036 November 12, 1999

Office of the Inspector General
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Acronyms

DLA	Defense Logistics Agency
DSDC	Defense Logistics Agency Systems Design Center
DUSD(L)	Deputy Under Secretary of Defense (Logistics)
IAWG	Interface Assessment Working Group
PSA	Principal Staff Assistant
Y2K	Year 2000

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November 12, 1999

MEMORANDUM FOR DIRECTOR, DEFENSE LOGISTICS AGENCY

SUBJECT: Audit Report on Defense Logistics Agency Logistics Year 2000 End-to-End Test Planning (Report No. D-2000-036)

We are providing this report for your information and use. This report is one of a series of reports being issued by the Inspector General, DoD, in accordance with an informal partnership with the DoD Chief Information Officer to identify progress made by DoD Components that are preparing information and technology systems for year 2000 compliance. We considered management comments on a draft of this report in preparing the final report.

Comments from the Defense Logistics Agency conformed to the requirements of DoD Directive 7650.3 and left no unresolved issues. Therefore, no additional comments are required.

We appreciate the courtesies extended to the audit staff. Questions on the audit should be directed to Mr. Tilghman Schraden at (703) 604-9186 (DSN 664-9186) (tschraden@dodig.osd.mil) or Ms. Kathryn Palmer at (703) 604-8840 (DSN 664-8840) (kpalmer@dodig.osd.mil). See Appendix E for the report distribution. The audit team members are listed inside the back cover.

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Report No. D-2000-036 **November 12, 1999**
(Project No. 9LD-9024.04)

Defense Logistics Agency Logistics Year 2000 End-to-End Test Planning

Executive Summary

Introduction. This is one in a series of reports being issued by the Inspector General, DoD, in accordance with an informal partnership with the Chief Information Officer, DoD, to monitor DoD efforts to address the year 2000 computing challenge. For a complete listing of audit projects addressing the issue, see the year 2000 web pages on the IGnet at http://www.ignet.gov.

The DoD Year 2000 Management Plan (DoD Management Plan) assigns responsibility to the Principal Staff Assistants for ensuring the end-to-end functional process flows that support their functional area are assessed either in a Joint Staff or commander in chief year 2000 operational evaluation, a Service-sponsored system integration test, or a functional area year 2000 end-to-end test. The Principal Staff Assistants are also responsible for planning, executing, and evaluating all mission-critical systems not otherwise tested and ensuring that processes that fall within their purview are evaluated. The Deputy Under Secretary of Defense (Logistics) (DUSD[L]) acts on behalf of the Under Secretary of Defense for Acquisition and Technology, the Principal Staff Assistant for logistics, in performing those functions for the logistics functional area. Logistics end-to-end test planning was accomplished through the "Logistics Capstone Operational Assessment Plan for Year 2000" (Logistics Capstone Plan).

Logistics functional end-to-end testing was divided into three phases. Level I was intra-Component testing, and Level II was inter-Component testing. Level III testing was to be conducted as required to perform retesting. The DUSD(L) provided oversight for Level II testing while delegating responsibility for Level I testing to the Components. Level II testing began May 25, 1999, and was completed July 14, 1999. The Joint Interoperability Test Command concluded in the final report, "Logistics Year 2000 End-to-End Level II Exercise Evaluation Report," October 1999, that the core logistics processes will continue unaffected by year 2000-related issues and that the logistics automated information systems will operate as a whole to support the five core logistics processes. The Defense Logistics Agency (DLA) completed Level I testing on April 21, 1999. DLA test results indicated that there were no year 2000-related failures during Level I testing and that the test objectives were met. DUSD(L) representatives stated that Level III testing would not be required because of the successful demonstration of year 2000 capabilities by the logistics systems participating in the test of the five core logistics processes.

Objective. The audit objective was to evaluate the effectiveness of the year 2000 end-to-end tests planned for the logistics functional area. This report, the fourth in a series on logistics end-to-end testing, addresses the overall end-to-end test planning accomplished by DLA.

Results. DLA end-to-end test planning for core logistics processes generally met the requirements outlined in the DoD Management Plan and the Logistics Capstone Plan. In response to the practical limitations imposed by resource constraints and calendar time remaining, DLA and the Services, in conjunction with the Logistics Year 2000 Interface Assessment Working Group and the DUSD(L), prioritized the logistics processes and data flows to be included in testing based on criticality to the warfighter. They identified five critical core logistics processes for inter-Component testing. DLA participated in the testing of all five of those processes. DLA identified seven core processes for intra-Component testing. DLA included 9 of its 26 mission-critical logistics systems in the logistics functional end-to-end testing. Two additional systems were included in higher level testing during commander in chief operational evaluations and one system was tested in the environmental security functional end-to-end testing. An additional system did not require higher level testing. DLA exercised contingency plans for all nine mission-critical systems included in the logistics end-to-end testing. However, DLA did not conduct higher level testing for 13 mission-critical logistics systems as required by the DoD Management Plan. DLA also did not document risk assessments for its core logistics processes and systems. As a result, DLA needs to document risk assessments and develop a risk mitigation strategy that will ensure that its critical processes and systems will perform the operational mission in the year 2000. See the Finding section for details.

Management Actions to Mitigate Risk. During the course of the audit, DLA provided the audit team with information on actions taken and planned to further mitigate risk of year 2000-related failures. DLA initiated a two-stage code scanning program. In addition, the Chief Information Officer, DLA, conducted a formal risk mitigation meeting in September 1999. The purpose of that meeting was to review post-remediation experiences and activities of other organizations and to develop a plan of action that focuses on addressing those areas within the overall DLA mission-critical information technology infrastructure. DLA also initiated a tracking system to monitor higher level testing of DLA mission-critical systems.

Summary of Recommendation. We recommend that the Chief Information Officer, DLA, develop a risk management plan for inclusion in the DUSD(L) plan that includes a risk assessment and mitigation strategy for the core logistics processes, with special emphasis on those processes and systems that were not included in higher level testing.

Management Comments. DLA concurred with the recommendation, stating that DLA is working with the Logistics Capstone operational test coordinator who has been tasked to complete the DUDS(L) risk assessment plan and that DLA will ensure that its core logistics processes and systems are included in the risk mitigation strategy. A discussion of management comments is in the Finding section of the report, and the complete text is in the Management Comments section.

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Background

Executive Order. Because of the potential failure of computers to function throughout the Government, the President issued Executive Order 13073, "Year 2000 Conversion," February 4, 1998, making it policy that Federal agencies ensure that no critical Federal program experiences disruption because of the year 2000 (Y2K) problem. The order requires that the head of each agency ensure that efforts to address the Y2K problem receive the highest priority attention in the agency.

Public Law. Public Law 105-261, "National Defense Authorization Act for Fiscal Year 1999," October 17, 1998, Section 334(b), directs that the Secretary of Defense ensure that "all mission critical systems that are expected to be used if the Armed Forces are involved in a conflict in a major theater of war are tested in at least two exercises." In addition, Section 334(d) states: "Alternative Testing Method. In the case of an information technology or national security system for which a simulated year 2000 test as part of a military exercise described in subsection (c) is not feasible or presents undue risk, the Secretary of Defense shall test the system using a functional end-to-end test or through a Defense Major Range and Test Facility Base."

DoD Y2K Management Strategy. In his role as the DoD Chief Information Officer, the Senior Civilian Official, Office of the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence), issued the "DoD Year 2000 Management Plan, Version 2.0" (DoD Management Plan) in December 1998. The DoD Management Plan required DoD Components to implement a five-phase (awareness, assessment, renovation, validation, and implementation) Y2K management process to be completed by December 31, 1998, for mission-critical systems.

The DoD Management Plan also provides guidance for implementing the Deputy Secretary of Defense memorandum, "Year 2000 (Y2K) Verification of National Security Capabilities," August 24, 1998, that requires that each Principal Staff Assistant (PSA) of the Office of the Secretary of Defense "verify that all functions under his or her purview will continue unaffected by Y2K issues." That verification was to be performed after completion of the five-phase management approach that culminated with completion of the implementation phase, December 31, 1998. That further testing, to be conducted during the first half of 1999, was planned and conducted from a mission perspective rather than a system perspective and would increase the confidence that any errors or omissions in system remediation would be found. The Deputy Under Secretary of Defense (Logistics) (DUSD[L]) acts on behalf of the Under Secretary of Defense for Acquisition and Technology, the PSA for logistics.

DoD Logistics End-to-End Planning. The DUSD(L) implemented and executed key components of the DoD Management Plan in his efforts to adequately plan for and manage logistics functional end-to-end testing. Test planning was accomplished through the "Logistics Capstone Operational Assessment Plan for Year 2000" (Logistics Capstone Plan), dated October 30,

1998, and approved in November 1998. The Logistics Capstone Plan provided the overall strategy for conduct of the logistics end-to-end testing and was coordinated with the Services, the Defense Logistics Agency (DLA), the Joint Interoperability Test Command, and the Joint Staff. The October 1998 Logistics Capstone Plan was updated in February 1999 and again in May 1999 to reflect evolving schedules and processes. Its name was changed to "Logistics Capstone Plan for Year 2000 End-to-End Test" as part of the February update. In this report, unless otherwise noted, Logistics Capstone Plan refers to the May 20, 1999, version.

The Logistics Capstone Plan defines three levels of testing and delegates responsibility for each. The multilevel test approach consisted of intra-Component events (Level I), inter-Component events (Level II), and post-test activities that include retest (Level III). Level I tests were designed to ensure processes and systems within a Component's organizational boundaries are Y2K ready. Level II testing was to verify core processes and information flows that involve more than a single Component are Y2K ready. The execution and oversight of the Level I testing was delegated to the Components (the Services and DLA), while DUSD(L) focused on the Level II testing and post-test events, such as retest, during Level III. Independent validation and verification for test planning, execution, and reporting of Level I and II testing for DLA systems was achieved through the use of an independent contractor. Independent validation and verification of Level II testing was also achieved through the use of the Joint Interoperability Test Command for test planning, execution, and reporting.

Objective

The audit objective was to evaluate the effectiveness of the Y2K end-to-end tests planned for the logistics functional area. This report, the fourth in a series on logistics end-to-end testing, addresses the overall end-to-end test planning accomplished by DLA. See Appendix A for a discussion of the audit scope and methodology and Appendix B for a summary of prior coverage.

Defense Logistics Agency Planning for Logistics Functional End-to-End Testing

DLA end-to-end test planning for core logistics processes generally met the requirements outlined in the DoD Management Plan and the Logistics Capstone Plan. In response to the practical limitations imposed by resource constraints and calendar time remaining, DLA and the Services, in conjunction with the Logistics Y2K Interface Assessment Working Group (IAWG)[1] and the DUSD(L), prioritized the logistics processes and data flows to be included in testing based on criticality to the warfighter. They identified five critical core logistics processes for inter-Component testing. DLA participated in the testing of all five of those processes. DLA identified seven core processes for intra-Component testing. DLA included 9 of its 26 mission-critical logistics systems in the logistics functional end-to-end testing. Two additional systems were included in higher level testing during commander in chief operational evaluations. One system was tested in the environmental security end-to-end test. One system did not require testing. DLA exercised contingency plans for all nine mission-critical systems included in the logistics end-to-end testing. However, DLA did not conduct higher level testing for its remaining 13 mission-critical logistics systems. DLA did not document risk assessments for its core logistics processes and systems. As a result, DLA needs to document risk assessments and develop a risk mitigation strategy that will ensure that its critical processes and systems will perform the operational mission in the year 2000.

End-to-End Test Guidance

The DoD Management Plan, Appendix I, provides guidance for the planning and implementation of functional end-to-end testing. It assigns responsibility to the PSAs for "ensuring the end-to-end functional process flows that support their functional area are assessed either in a JS/CINC [Joint Staff/Commander in Chief] Y2K Op Eval [Operational Evaluation], a Service-sponsored System Integration Test, or through a Functional-Area Y2K End-to-End Test." Appendix I also states that the PSAs' responsibilities include "planning, executing, and evaluating all mission-critical systems not otherwise tested and for ensuring that processes that fall within their purview are evaluated." The Logistics Capstone Plan provided the overall strategy for conduct of the DoD logistics end-to-end testing.

[1]The Logistics Y2K IAWG membership was composed of DoD Component representatives and was chaired by the Director, Logistics Systems Modernization.

DLA Planning for End-to-End Testing

The DLA end-to-end test planning for core logistics processes generally met the requirements outlined in the DoD Management Plan and the Logistics Capstone Plan. DLA implemented the end-to-end testing guidance provided in the Logistics Capstone Plan with the issuance of the "Year 2000 (Y2K) DLA Capstone Testing Level I and Level II DLA DID-Software Test Plan (STP), DI-IPSC-81438, Version 5.0," undated (DLA Capstone Test Plan). The DLA Capstone Test Plan defines the DLA strategy for its participation in the logistics end-to-end testing for Level I and Level II testing. The overall objective of DLA participation in the DoD logistics end-to-end test effort was to determine whether DLA mission-critical systems could interface correctly both internally with other DLA systems (Level I testing) and externally with other DoD systems (Level II testing) in a Y2K environment. As required by the Logistics Capstone Plan, the DLA Capstone Test Plan addressed areas such as end-to-end test strategy, critical core processes, mission-critical systems that supported the core processes, and test limitations.

DLA started Level I end-to-end testing of its core processes and systems on April 5, 1999, and completed the testing on April 21, 1999. DLA started Level II end-to-end testing of its core processes and systems on May 25, 1999, and completed the testing on July14, 1999. The DoD Management Plan calls for final test reports to be completed within 30 days of completion of testing. In the final test report, "Logistics Year 2000 End-to-End Level II Exercise Evaluation Report," October 1999, the Joint Interoperability Test Command concluded that the core logistics processes will continue unaffected by Y2K-related issues and that the logistics automated information systems will operate as a whole to support the five core logistics processes included in Level II testing. Level II testing identified two anomalies that were not Y2K-related, one that was date-related and one that was not, for two of the six DLA systems tested. DLA had completed corrective actions for those systems by the end of Level II testing. The anomalies in the two DLA systems, the Distribution Standard System and the Standard Automated Materiel Management System, were corrected in June and July, respectively. DLA results from the Level I testing indicated no Y2K-related failures and that the objectives of the test were met.

DLA Test Responsibilities. The DLA Capstone Test Plan assigns responsibility to the DLA Y2K Test Director and the DLA Systems Design Center (DSDC)[2] for conducting qualification testing of the mission-critical logistics systems and core processes. Qualification testing includes the formal documentation of test scenarios, documentation of trouble reports, and certification of the applicable programs. DSDC personnel in Columbus, Ohio; New Cumberland and Philadelphia, Pennsylvania; and Ogden, Utah, provided support for the systems that were included in the Level I and II testing. DSDC was also responsible for performing Level I and II testing of core processes and

[2]The DSDC was disestablished in November 1998 and its operations and personnel transitioned to other elements within DLA. For simplicity, we have referred to the role played by the former DSDC personnel by their former organizational name throughout this report.

for performing configuration management control of the applications during the testing. Systems analysts, computer programmers, and computer specialists performed the Level I and II testing. DLA Level I testing was verified and validated by both DSDC personnel and an independent contractor. Independent verification and validation of Level II testing was achieved through the use of the Joint Interoperability Test Command in support of the DUSD(L).

Core Processes. DLA and the Services, in conjunction with the IAWG and the DUSD(L), agreed that all mission-critical systems and processes could not be assessed during the logistics functional Level II end-to-end testing because of time and resource constraints. As a result, they identified 8 out of 15 core supply and materiel management processes as mission-critical. The Logistics Capstone Plan defines those mission-critical processes[3] as being "so dependent on automation, that within hours or days of an automation system being needed and not available, a warfighting mission is impaired." The eight mission-critical processes were further refined to five core processes determined to be required to the support the warfighter. Those five core processes were the basis for the logistics functional end-to-end testing conducted during the Level II (inter-Component) testing. The five core processes were requisition, shipment, receipt, inventory, and asset status. In addition, DLA identified seven core processes for Level I (intra-Component) testing. The seven intra-Component processes included four of the processes from Level II (requisition, shipment, receipt, and inventory) and three additional processes (contract award, contract shipment, and shipment alert).

Systems Supporting Core Processes. The general approach taken by DLA and the Services was to identify critical functional processes and then identify the systems that supported those processes. DLA identified six mission-critical logistics systems that supported the Level II testing of the five core processes. DLA identified nine mission-critical logistics systems that supported Level I testing of the seven DLA processes. All of the Level II systems were also tested during the Level I testing. Appendix C contains a list of the systems included in Level I and Level II testing and the logistics processes that they supported.

Test Limitations. Because all logistics processes and mission-critical system interfaces could not be tested within the time available, DLA limited its testing in several areas. Specifically, test limitations occurred in the test environment, date crossings tested, and transactions tested.

Test Environment. The DLA Capstone Test Plan stated that the purpose of Level I and Level II end-to-end testing was to ensure interoperability in Y2K environments of mission-critical system interfaces. Further, testing was

[3]To avoid confusing mission-critical process and mission-critical systems, the term core processes is used throughout this report to refer to the five processes identified for end-to-end testing.

to include all files, interface control documents, and support utilities needed to validate the Logistics Capstone Plan. Specifically, Level I and Level II end-to-end testing ensured that:

- Y2K platforms met or exceeded the performance of the current operating environments without change to the system functionality,
- all program support utilities functioned properly in the new Y2K environment,
- uploads and downloads of data functioned properly, and
- applications would function and perform in the Y2K environments using the crossover dates.

The limitations in the DLA test environment were as follows.

- System testing did not validate the support utility programs.
- Tests were not conducted in production environments[4] but used representative test environments.
- Testing was not performed to ensure complete integration of modules and hardware and to ensure that all increments' functionalities were present and operable.
- Testing was not an uninterrupted end-to-end test. Because the test environment could not be configured to simulate all systems at one time, the test was accomplished systematically by business area and process cycle.
- Qualification testing was limited to a representative sample of critical DLA applications.

Although not listed as a test limitation in the DLA Capstone Test Plan, the Logistics Capstone Plan acknowledged that not all DLA commodity groups could be tested because of limited calendar time and availability of test environments. Specifically, out of six DLA commodity groups managed by the Standard Automated Materiel Management System, one (electronics) was included in the inter-Component Level II testing and one (construction) was included in the intra-Component Level I testing. The Standard Automated Materiel Management System is used by three DLA Supply Centers to manage inventory for six commodities: construction, electronics, clothing and textile, medical, industrial, and general supplies. Because each commodity executes unique programs within the Standard Automated Materiel Management System, there are six copies, or versions, of the Standard Automated Materiel Management System. Each copy supports a commodity. Commodities not

[4]Production environments are the environments in which software applications operate on a day-to-day basis

included in either the Level I or II testing were clothing and textile, industrial, medical, and general supplies. The medical supplies commodity, which also uses the Defense Medical Logistics Supply System, was included in the functional end-to-end testing being conducted by the PSA for health affairs. The subsistence commodity was included under Level I testing for the Defense Integrated Subsistence Management System, but was not included in Level II testing.[5]

Date Crossings Tested. Date scenarios tested in Level II testing were fiscal year (September 30, 1999, to October 1, 1999), calendar year (December 31, 1999, to January 1, 2000), and leap day (February 28, 2000, to February 29, 2000, and February 29, 2000, to March 1, 2000). The DLA Capstone Test Plan stated that because of technical constraints on the DLA test bed and the time available for implementing Y2K compliant systems, DLA selected a group of Y2K dates for evaluation to ensure that the systems operate to maximum capability and that system functionality remains intact. Date scenarios tested in Level I testing were fiscal year, calendar year, and the quantitative location reconciliation process date of January 9, 2000. The quantitative location reconciliation process date is the date for a DLA internal inventory management report on which the inventory balances of the inventory control points are aligned with the balances at the storage activity. The leap day date crossings were not tested in Level I testing because of time constraints on accomplishing the testing. A baseline test was performed to compare current data with the test results.

Transactions Tested. DLA limited the number and type of transactions it tested in Level I and Level II end-to-end testing. During the process of refining the Logistics Capstone Plan, the IAWG selected for end-to-end testing supply transactions for electronics items. The DLA Capstone Test Plan scheduled 308 test cases for Level I testing. The test cases identified the purpose of each test, such as to test the receipt of inventory, and identified the systems performing the test, the national stock numbers that would be processed through the systems as part of the testing, and the expected test results. Those test cases were developed for each system participating in the Level I testing and supported the seven processes that DLA identified for Level I testing. Level I testing was performed to ensure that processes and systems within DLA would function properly across the fiscal year, the calendar year, and in the year 2000.

DLA processed 176 transactions during Level II testing. They included 24 Army, 82 Navy, 39 Air Force, and 31 Marine Corps transactions that represented supply requisitions between Services. The Level II transactions included 28 DLA-managed national stock numbers.

[5]DLA manages the subsistence commodity group but does not use the Standard Automated Materiel Management System to do so.

Higher Level Testing of Mission-Critical Systems

DLA included 12 of its 26 mission-critical logistics systems in one of two types of higher level tests, functional area end-to-end testing and commander in chief operational evaluations, that are described in the DoD Management Plan. DLA did not initiate any Service integration testing, a third type of higher level testing described in the DoD Management Plan. DLA did not conduct any higher level testing for 14 mission-critical logistics systems.

Requirement for Higher Level Testing. In keeping with Public Law 105-261, Section 334(b), the DoD Management Plan requires that all mission-critical systems that would be directly involved in a major theater war be tested in a commander in chief operational evaluation. Also, each of those systems must be tested a second time, in an additional commander in chief operational evaluation, a functional area end-to-end test, or a Service-sponsored system integration test. All other mission-critical systems must be tested at least once in either a functional area end-to-end test or a Service-sponsored system integration test.

Systems Tested. Of the 26 mission-critical logistics systems listed in the DoD Y2K Reporting Database, DLA identified a total of 9 systems that were to be tested in Level I intra-Component testing. Six of the nine systems were also included in Level II inter-Component testing. Two additional DLA systems were included or scheduled to be included in at least two commander in chief operational evaluations. Three systems that were included in commander in chief operational evaluations were also included in Level I and Level II testing and, as a result, met the requirement for two higher level tests. One system, the Defense Reutilization and Marketing Automated Information System, was tested in the environmental security end-to-end testing. The remaining 14 DLA mission-critical logistics systems were not included in higher level testing as defined by the DoD Management Plan. Appendix D contains a list of the DLA mission-critical systems and their higher level test status.

Systems Not Tested. DLA cited three reasons for not including the 14 mission-critical systems in higher level testing: 12 systems did not exchange date information with other systems; the deployed portion of one system operated in a stand-alone environment; and one system did not support the core processes identified for functional end-to-end testing. However, only one system, the deployed portion of a system operating in a stand-alone environment, met the criteria for exclusion from higher level testing provided by the DoD Management Plan. DLA did not include 13 systems in higher level testing as required by the DoD Management Plan.

DLA identified 12 systems that did not exchange dates with other systems and, therefore, DLA did not require testing of those systems. The DoD Management Plan states that inclusion in one of the higher level testing events is not explicitly required for systems that have no date dependency or that are in a stand-alone environment. The DoD Management Plan also allows waivers for systems that cannot be included in a functional test. However, DLA did not report any of those 12 systems as not having date dependency or as having a waiver. The

DoD Y2K Reporting Database indicated that the 12 systems were certified as Y2K compliant as a result of Y2K remediation efforts that involved independent testing or an independent audit of the system, and that testing was completed using a 2- or 4-digit year format. In addition, the certification level assigned to those systems did not indicate that the systems did not process date-related data. As a result, those 12 systems appear to be date dependent and should have been included in higher level testing designed to test interfaces.

DLA excluded the Fuels Automated System (Base Level) from higher level testing because that portion of the system does not interface with other systems in the configuration currently deployed. According to the DoD Management Plan, higher level testing was not required because the deployed portion of the system was in a stand-alone environment. Although the Fuels Automated System is an integrated system consisting of several modules, DLA reported the Fuels Automated System (Base Level) as a mission-critical system in the DoD Y2K Reporting Database. The Enterprise Level portion of the system is under development and will interface with external financial and procurement systems. DLA explained that the development of the Enterprise Level portion would not be completed until after January 2000.

DLA reported that 1 of the 14 mission-critical systems not included in a higher level test, the Federal Logistics Information System, did not support the core processes identified for Level I and Level II testing. Support of a core process was not one of the criteria for determining the requirement for higher level testing. Higher level testing is still required for the system because it is defined as a mission-critical system having a date dependency. The DoD Management Plan states that inclusion in one of the higher level testing events is not explicitly required for systems that have no date dependency or that are in a stand-alone environment. The DoD Management Plan also allows waivers for systems that cannot be included in a functional test. However, DLA did not report the system as not having date dependency, as operating in a stand-alone environment, or as having a waiver.

Contingency Plan Testing

DLA exercised the contingency plans for eight of the nine mission-critical logistics systems included in Level I and II logistics end-to-end testing by the June 30, 1999, cutoff date required by the DoD Management Plan. The contingency plan for the remaining system was exercised during September 1999. The DoD Y2K Reporting Database showed that DLA had completed contingency plans for all nine mission-critical logistics systems included in the DLA Level I and II logistics end-to-end testing.

The Logistics Capstone Plan requires that all thin-line systems supporting the identified core processes have an effective contingency plan. In addition, the Logistics Capstone Plan states that the contingency plans must be developed and validated by operators, must be resourced, and must be tested. Further, the Logistics Capstone Plan states that contingency test plans should address the test objectives, test approach, required equipment and resources, necessary

personnel, schedules and locations, test procedures, expected results, and exit criteria. The DoD Management Plan established a target completion date of March 31, 1999, for operational contingency plans and June 30, 1999, for exercising those contingency plans. However, the Logistics Capstone Plan extended the target completion date for testing of individual contingency plans to September 1, 1999. As of October 14, 1999, the contingency plans for the nine mission-critical DLA logistics systems had been exercised.

Measures to Minimize Risk of Y2K-Related System Failures

DLA did not document the risk assessments performed during the process of prioritizing logistics processes for inclusion in end-to-end testing as required by the DoD Management Plan and the Logistics Capstone Plan. The DoD Management Plan states that the Y2K event master planning sessions (the Logistics IAWG meetings) were to identify and prioritize core processes and perform risk assessments. The Logistics Capstone Plan made each Service and agency responsible for identifying the risks that affect their portions of the Level I and II end-to-end functional tests and their specific systems tests and for reporting on risk management and mitigation efforts. The Logistics Capstone Plan identified four general categories of corporate-level risk: funding; scheduling; scope of testing; and test environment. It also assigned each category a risk rating of high, medium, or low, based on probability of occurrence and consequences of occurrence, as well as listed the mitigation of a particular risk. The Logistics Capstone Plan stated that the discussion of corporate-level risks was an initial risk assessment. In addition, the Logistics Capstone Plan stated that a complete risk mitigation plan and detailed procedures for managing and reporting on risks will be incorporated in an overall risk management plan.

DUSD(L) had planned to complete a risk management plan on all core logistics processes by September 1999. We determined that the DLA Capstone Test Plan did not include guidance on documenting risk assessments or preparing or submitting a risk analysis or mitigation plan to the DUSD(L) or to DLA management for the DLA processes and systems. As a result, as of August 30, 1999, DLA had not documented risk assessments or completed a risk management plan that documented the DLA risk mitigation strategy for review and inclusion in the overall DUSD(L) risk management plan. Therefore, the DUSD(L) did not have sufficient information to complete a risk management plan for core logistics processes by September 1999, and may not be able to meet the revised goal of November 1999.

Management Actions to Mitigate Risk

During the course of the audit, DLA provided the audit team with information on actions taken and planned to further mitigate risk of Y2K-related failures. DLA initiated a two-stage code scanning program. The first stage consists of a

representative sample scan of each mission-critical system's code to detect Y2K-related errors. The second stage consists of scanning 100 percent of a system's code.

In addition, the Chief Information Officer, DLA, conducted a formal risk mitigation meeting in September 1999. The purpose of that meeting was to review post-remediation experiences and activities of other organizations and to develop a plan of action that focuses on those areas within the overall DLA mission-critical information technology infrastructure where the most significant degree of continuity or mission fulfillment risk remains. DLA also initiated a tracking system to monitor higher level testing of DLA mission-critical systems.

Summary

DLA generally complied with the DoD Management Plan and the Logistics Capstone Plan in planning and managing its efforts under Level I and Level II logistics end-to-end testing. DLA participated in the testing of the five core logistics processes identified for Level II testing. In addition, DLA identified seven core processes for Level I testing, which included four of the processes from Level II and three additional processes. DLA included 12 of 26 mission-critical systems in higher level testing. One system did not require testing. However, DLA did not ensure that the other 13 mission-critical systems that were not included in end-to-end testing or commander in chief operational evaluations were included in the higher level tests required by the DoD Management Plan.

DLA met the DoD Management Plan requirements for the exercising of contingency plans but did not complete this task until after the June 30, 1999, date required by the DoD Management Plan. The contingency plan for one of the nine mission-critical logistics systems included in Level I and Level II testing was not exercised until September 1999. In addition, DLA did not document the risk assessments performed during the process of prioritizing logistics processes for inclusion in end-to-end testing as required by the DoD Management Plan and the Logistics Capstone Plan.

Management Comments on the Finding and Audit Response

DLA Comments. DLA partially agreed with the finding, pointing out that 12 of the DLA mission-critical logistics systems not tested did not require higher level testing because they did not exchange date-related information. DLA also stated that the Defense Reutilization and Marketing Automated Information System was tested in an environmental security end-to-end test; the Fuels Automated System (Base Level) was a stand-alone system; and the Federal Logistics Information System was not identified by the commanders in chief or the PSAs as part of a critical logistics process requiring testing. DLA also stated that it had tested all mission-critical systems at the Component level.

DLA provided an update to the status of contingency plan testing, stating that the ninth critical system that supported the core processes included in the end-to-end testing had been exercised in September 1999. In addition, DLA pointed out that it had conducted and documented a comprehensive risk assessment of all business procedures, and that the audit team's request for risk assessment documentation was confined to end-to-end test planning.

Audit Response. We disagree with the DLA statement that 12 systems did not require testing because they did not exchange date-related information with other systems. The 12 systems cited by DLA are date-dependent systems that require higher level testing in accordance with guidance provided by the DoD Management Plan. We have also revised the report based on the DLA explanation of the status of the Fuels Automated System. We added information noting that the Defense Reutilization and Marketing Automated Information System was included in an environmental security end-to-end test. We disagree with the DLA statement that the Federal Logistics Information System did not require higher level testing because it was not identified by the commander in chiefs or the PSAs as part of a critical logistics process. The DoD Management Plan requires that all mission-critical systems having date dependency be tested at least once in a higher level test. The Federal Logistics Information System was identified by DLA as a mission-critical system in the DoD Y2K Reporting Database. We revised the number of systems not tested because they did not support core processes identified for Level I and II testing based on the DLA identification of the Federal Logistics Information System as being the one system in that category. In addition, we revised the reported number of systems not tested and the status of contingency plans exercised. This audit report addresses the logistics functional end-to-end testing as noted by DLA, and does not address risk assessments for internal DLA business processes.

Recommendation and Management Comments

We recommend that the Chief Information Officer, Defense Logistics Agency, develop a risk management plan for inclusion in the Deputy Under Secretary of Defense (Logistics) plan that includes a risk assessment and mitigation strategy for the core logistics processes, with special emphasis on those processes and systems that were not included in higher level testing.

DLA Comments. DLA concurred, stating that DLA is working with the Logistics Capstone operational test coordinator who has been tasked to complete the DUSD(L) risk assessment plan. The mitigation actions that result from the DUSD(L) risk assessment will be worked within the Logistics IAWG. As an IAWG member, DLA will ensure that its core logistics processes and systems are included in the risk mitigation strategy.

Appendix A. Audit Process

This is one in a series of reports being issued by the Inspector General, DoD, in accordance with an informal partnership with the Chief Information Officer, DoD, to monitor DoD efforts to address the Y2K computing challenge. For a listing of audit projects addressing the issue, see the Y2K web pages on IGnet at http://www.ignet.gov.

Scope and Methodology

Work Performed. We reviewed the Y2K test planning efforts of DLA for the logistics functional end-to-end testing. We evaluated the Y2K planning efforts of DLA and compared those efforts with the criteria contained in the DoD Management Plan and the Logistics Capstone Plan. We reviewed Public Law 105-261, Section 334; the Deputy Secretary of Defense memorandum of August 24, 1998; the DoD Management Plan; the Logistics Capstone Plan; the DLA Capstone Test Plan; and other guidance regarding the testing of mission-critical logistics systems. Documents reviewed were dated from October 1998 through September 1999. We interviewed personnel within the offices of the DUSD(L) and DLA. We also interviewed contractor representatives involved with end-to-end testing.

DoD-Wide Corporate-Level Goals. In response to the Government Performance and Results Act, DoD established 2 DoD-wide corporate-level goals and 7 subordinate performance goals. This report pertains to achievement of the following goal (and subordinate performance goal).

> **Goal:** Prepare now for an uncertain future by pursuing a focused modernization effort that maintains U.S. qualitative superiority in key warfighting capabilities. Transform the force by exploiting the Revolution in Military Affairs and reengineer the Department to achieve a 21st century infrastructure. **Performance Goal:** Transform U.S. military forces for the future. **(00-DoD-2.2)**

DoD Functional Area Reform Goals. Most major DoD functional areas have also established performance improvement reform objectives and goals. This report pertains to achievement of the following objectives and goals in the Information Technology Management Functional Area.

- **Objective:** Become a mission partner. **Goal:** Serve mission information users as customers. **(ITM-1.2)**
- **Objective:** Provide services that satisfy customer information needs. **Goal:** Modernize and integrate Defense information infrastructure. **(ITM-2.2)**

- **Objective:** Provide services that satisfy customer information needs. **Goal:** Upgrade technology base. **(ITM-2.3)**

High-Risk Area. In its identification of risk areas, the General Accounting Office has specifically designated risk in resolution of the Y2K problem as high. This report provides coverage of that problem and of the overall Information Management and Technology high-risk area.

Audit Type, Dates, and Standards. We performed this program audit from July through September 1999 in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD. We did not use computer-processed data for this audit.

Contacts During the Audit. We visited or contacted individuals and organizations within DoD. Further details are available on request.

Management Control Program. We did not review the management control program related to the overall audit objective because DoD recognized the Y2K issue as a material management control weakness area in the FY 1998 Annual Statement of Assurance.

Appendix B. Summary of Prior Coverage

The General Accounting Office and the Inspector General, DoD, have conducted multiple reviews related to Y2K issues. General Accounting Office reports can be accessed over the Internet at http://www.gao.gov. Inspector General, DoD, reports can be accessed over the Internet at http://www.dodig.osd.mil. The reports most relevant to the subject matter of this report are listed below.

General Accounting Office

General Accounting Office Report No. GAO/AIMD-99-172 (OSD Case No. 1823), "Defense Computers: Management Controls Are Critical to Effective Year 2000 Testing," June 30, 1999.

Inspector General, DoD

Inspector General, DoD, Report No. D-2000-033, "Army Logistics Year 2000 End-to-End Test Planning," November 5, 1999.

Inspector General, DoD, Report No. 00-021, "Air Force Logistics Year 2000 End-to-End Test Planning," October 26, 1999.

Inspector General, DoD, Report No. 00-002, "Year 2000 End-to-End Testing: Logistics Capstone Plan," October 1, 1999.

Appendix C. Defense Logistics Agency Mission-Critical Logistics Systems and Processes – Level I and Level II Testing

	Mission-Critical Processes							
System	Requisition	Shipment	Receipt	Inventory	Asset Control	Contract Award	Contract Shipment	Shipment Alert
DESEX	I	I	I	I		I	I	
DISMS	I	I	I	I				
DMARS	I,II	I,II	I,II	I,II	II			
DNCS	I,II	I,II	I,II	I,II	II			
DSS	I, II	I, II	I, II	I, II			I	I
DSS Bridge	I, II	I, II	I, II	I, II				
EDIPAS	I							
MADS	I, II	I, II	I,II	I, II		I	I	I
SAMMS	I, II	I, II	I	I, II		I	I	

DESEX Defense Supply Expert System
DISMS Defense Integrated Subsistence Management System
DMARS Defense Automatic Addressing System Micro Automated Routing System
DNCS Defense Automatic Addressing System Center (DAASC) Network Control System
DSS Distribution Standard System
DSS Bridge Distribution Standard System Bridge
EDIPAS Electronic Data Interchange Pass-through
MADS Messaging Accountability Delivery System
SAMMS Standard Automated Materiel Management System

Appendix D. Defense Logistics Agency – Higher Level Test Status of Mission-Critical Logistics Systems

System[1]	Level I Test	Level II Test	CINC[2] Test	Not Tested
DAASACP				X[3]
DAISY				X[4]
DAMES				X[3]
DARS				X[3]
DEPRA				X[3]
DESEX	X			
DFAMS			X	
DIELOG				X[3]
DISMS	X			
DMARS	X	X	X	
DMRS				X[3]
DNCS	X	X	X	
DODAAD				X[3]
DSS	X	X		
DSS Bridge	X	X		
EDIPAS	X			
FAS				X[5]
FLIS				X[6]
ILCS				X[3]
JTAV			X	
MADS	X	X		
MAPAD				X[3]
MIDTIER				X[3]
MSOS				X[3]
SAMMS	X	X	X	
SPLC				X[3]

[1]System acronyms are defined on the following page.

[2]Commander in chief.

[3]System identified by DLA as not requiring higher level testing because it does not exchange date information with other systems.

[4]DAISY was included in the environmental security end-to-end testing, not the logistics end-to-end testing.

[5]Deployed portion of FAS operates in a stand-alone environment and higher level testing is not required.

[6]System identified by DLA as not requiring higher level testing because it was not identified by commanders in chief or PSAs as part of a critical core logistics process.

System Acronym	System Name
DAASACP	Defense Automatic Addressing System (DAAS) Allied Communications Procedures
DAISY	Defense Reutilization and Marketing Automated Information System
DAMES	DAAS Center Automated Message Exchange System
DARS	DAAS AUTODIN Replacement System
DEPRA	Defense Program for Redistribution of Assets
DESEX	Defense Supply Expert System
DFAMS	Defense Fuels Automatic Management System
DIELOG	DMSC Integrated Email Logistics
DISMS	Defense Integrated Subsistence Management System
DMARS	DAAS Micro Automated Routing System
DMRS	DAAS Master Routing System
DNCS	DAAS Center Network Control System
DODAAD	DoD Activity Address Directory
DSS	Distribution Standard System
DSS Bridge	Distribution Standard System Bridge
EDIPAS	Electronic Data Interchange Pass-through
FAS	Fuels Automated System (Base Level)
FLIS	Federal Logistics Information System
ILCS	International Logistics Communication System
JTAV	Joint Total Asset Visibility
MADS	Messaging Accountability Delivery System
MAPAD	Military Assistance Program Address Directory
MIDTIER	Mid-Tier Server
MSOS	Master Source of Supply
SAMMS	Standard Automated Materiel Management System
SPLC	Standard Point Location Project

Appendix E. Report Distribution

Office of the Secretary of Defense

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  Deputy Under Secretary of Defense (Logistics and Materiel Readiness)
    Director, Logistics System Modernization
  Director, Defense Logistics Studies Information Exchange
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  Deputy Chief Financial Officer
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Director, Defense Logistics Agency
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Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Governmental Affairs
Senate Special Committee on the Year 2000 Technology Problem
House Committee on Appropriations
House Subcommittee on Defense, Committee on Appropriations
House Committee on Armed Services
House Committee on Government Reform
House Subcommittee on Government Management, Information, and Technology, Committee on Government Reform
House Subcommittee on National Security, Veterans Affairs, and International Relations, Committee on Government Reform
House Subcommittee on Technology, Committee on Science

Defense Logistics Agency Comments

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IN REPLY REFER TO DDAI

OCT 14 1999

MEMORANDUM FOR ASSISTANT INSPECTOR GENERAL FOR AUDITING, DEPARTMENT OF DEFENSE

SUBJECT: DoD IG Final Report, Defense Logistics Agency Logistics Year 2000 End-to-End Test Planning (Project No. 9LD-9024.04)

This is in response to the September 30, 1999, Draft Report. DLA partially concurs with the finding in the draft audit report that "DLA did not conduct higher level testing for its remaining 15 mission-critical logistics systems." Although the statement is essentially correct, 12 of those systems do not require higher level testing because they do not exchange date information. The draft report also states that "DLA did not document risk assessments for its core logistics processes and systems." DLA has conducted and documented a comprehensive risk assessment of all of its business processes. See attached comments.

RAYMOND A. ARCHER III
Rear Admiral, SC, USN
Deputy Director

Attachments

Final Report
Reference

OCT 1 4 1999

SUBJECT: Defense Logistics Agency Logistics Year 2000 End-to-End Test Planning (Project No. 9LD-9024.04)

FINDING: Defense Logistics Agency Planning for Logistics Functional End-to-End Testing. DLA end-to-end test planning for mission-critical logistics processes generally met the requirements outlined in the DoD Management Plan and the Logistics Capstone Plan. In response to the practical limitations imposed by resource constraints and calendar time remaining, DLA and the Services, in conjunction with the Logistics Y2K Interface Assessment Working Group (IAWG) and the DUSD(L), prioritized the logistics processes and data flows to be included in testing based on criticality to the warfighter. They identified five critical core logistics processes for inter-Component testing. DLA participated in the testing of all five of those processes DLA identified seven mission-critical processes for intra-Component testing. DLA included 9 of its 26 mission-critical logistics systems in the logistics functional end-to-end testing. Two additional systems were included in higher level testing during commander in chief operational evaluations. However, DLA did not conduct higher level testing for its remaining 15 mission-critical logistics systems. Of the nine mission-critical systems included in the logistics end-to-end testing, contingency plans for eight systems had been exercised DLA did not document risk assessments for its core logistics processes and systems As a result, DLA needs to document risk assessments and develop a risk mitigation strategy that will ensure that its critical processes and systems will perform the operational mission in the year 2000.

DLA COMMENTS: Partially concur.

The statement that DLA did not conduct higher level testing for its remaining 15 mission critical logistics systems is correct, however, 12 of these systems do not require higher level testing because they do not exchange date information This information is partially captured in Appendix D of the report The three additional systems that are not identified in Appendix D, which do not exchange date information, are DAASACP, DEPRA, and DMRS. The DAISY system participated in the Environmental Security end-to-end test, FAS is a standalone system, and FLIS was not identified by the Commanders-In-Chief or Principal Staff Assistants as a critical logistics process requiring testing Additionally, all mission critical systems were tested by DLA at the Component level

Revised

DLA's contingency plan for the ninth mission critical system (MADS) was exercised on September 2, 1999.

Revised

The draft audit report also concludes that DLA did not document risk assessments for its core logistics processes and systems and contributes to the recommendation that the DLA CIO develop a risk management plan that includes a risk assessment and mitigation strategy for its core logistics processes

OCT 14 1999

DLA has conducted and documented a comprehensive risk assessment of all of its business processes. This has been an iterative assessment/reassessment process over a two-year period. The documentation is, and has been, available but the requests for risk assessment documentation was confined and limited specifically to capstone planning.

RECOMMENDATION 1: We recommend that the Chief Information Officer, Defense Logistics Agency develop a risk management plan for inclusion in the Deputy Under Secretary of Defense (Logistics) plan that includes a risk assessment and mitigation strategy for the core logistics processes, with special emphasis on those processes and systems that were not included in higher level testing.

DLA COMMENTS: Concur

DLA is working with the Logistics Capstone operational test coordinator who has been tasked to complete the DUSD (L) risk assessment plan. The mitigation actions that result from the DUSD (L) risk assessment will be worked within the Logistics Interface Assessment Working Group. DLA is an integral part of this group and will ensure that its core logistics processes and systems are included in the risk mitigation strategy This course of action will also ensure a collaborative effort with the Services for all processes which cross Components boundaries.

DISPOSITION: Action is Ongoing. ECD: November 1, 1999

ACTION OFFICER: Clarence McNeill, CIC, 767-2181

REVIEW/APPROVAL: Sandra King, CI

COORDINATION: Peggy Hayes, DDAI

Audit Team Members

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